

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (canceled).

2. (currently amended): A hologram recording and reproducing apparatus
~~according to claim 1 for recording data on a recording medium and reproducing data from the recording medium, the recording medium being made of a photorefractive crystal having a parallel plate shape, said apparatus comprising:~~

A/
~~a support portion for detachably supporting and rotating the recording medium;~~
~~a recording-reference-light-beam-supplying-portion for supplying a coherent recording reference light beam propagating along an optical axis to a major surface of said recording medium;~~

~~a signal-light-beam-supplying-portion for supplying a coherent signal light beam which is modulated in accordance with image data, in an optical path into the recording medium such that said signal light beam intersects with the recording reference light beam to produce an optical interference pattern with said reference and signal light beams within said recording medium;~~

~~a reproducing-reference-light-beam-supplying-portion for supplying into the recording medium a coherent reproducing reference light beam propagating in an opposite direction along said optical axis of the recording reference light beam to generate a phase conjugation wave from a refractive-index grating of the optical interference pattern;~~

a splitting portion for splitting the phase conjugation wave from the optical path of said signal light beam to image a dot pattern with the phase conjugation wave; and a photo-detecting portion for detecting the dot pattern imaged with said phase conjugation wave to reproduce the image data,

wherein said reproducing reference light beam has an across-section having an area larger than that of said recording reference light beam.

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3. (currently amended): A hologram recording and reproducing apparatus according to claim 42, wherein said reproducing-reference-light-beam-supplying-portion includes a reflector for reflecting the recording reference light beam passing through said recording medium back to said recording medium; and a shutter capable of cutting off said recording reference light beam and disposed in the optical path to said reflector.

4. (currently amended): A hologram recording and reproducing apparatus according to claim 42, further comprising a 1/2 wave plate disposed in the optical path of said reproducing reference light beam.

5. (currently amended): A hologram recording and reproducing apparatus according to claim 42, wherein said reproducing-reference-light-beam-supplying-portion includes a reflector for reflecting the recording reference light beam passing through said recording medium back to said recording medium; and a 1/4 wave plate disposed in the optical path to said reflector.

6. (currently amended): A hologram recording and reproducing apparatus according to claim 12, when-wherein said recording medium is sensitive to a gate light beam having a wavelength shorter than that of the reference and signal light beams to develop light induced absorption, said apparatus further comprising a gate-light-beam-supplying-portion for supplying the gate light beam into the recording medium.

7. (new): A hologram apparatus exchanging data with a recording medium, comprising:

at least one light source that generates a recording reference light beam, a reproducing reference light beam, and a signal light beam,

wherein the signal light beam is modulated in accordance with image data,

wherein the signal light beam intersects with the recording reference light beam to produce an interference pattern within the recording medium,

wherein the reproducing reference light beam generates a wave from a refractive index grating of the interference pattern;

at least one optical element that creates a dot pattern from the wave; and

a detector that detects the dot pattern and outputs reproduced image data,

wherein said reproducing reference light beam has a cross-sectional area larger than a cross-sectional area of said recording reference light beam.

8. (new): The hologram apparatus as claimed in claim 7, wherein the recording medium comprises a photorefractive crystal having a parallel plate shape.

9. (new): The hologram apparatus according to claim 7, wherein said at least one light source comprises:

a reflector that reflects the recording reference light beam passing through said recording medium back to said recording medium; and

a shutter capable of preventing said recording reference light beam from impinging on said reflector.

10. (new): The hologram apparatus according to claim 7, further comprising a 1/2 wave plate disposed in an optical path of said reproducing reference light beam.

*a 1/2
wave plate*
11. (new): The hologram apparatus according to claim 7, wherein said at least one light source comprises:

a reflector that reflects the recording reference light beam passing through said recording medium back to said recording medium; and

a 1/4 wave plate disposed in an optical path of the recording reference light beam to said reflector.

12. (new): The hologram apparatus according to claim 7, wherein said recording medium is sensitive to a gate light beam having a wavelength shorter than that of the recording reference light beam and the signal light beam to develop light induced absorption, and

wherein said at least one light source supplies the gate light beam into the recording medium.